

CLAIMS

1. A method of determining susceptibility to heart disease in a subject, said
5 method comprising analysing genetic material of a subject to determine which of the B/b, A/a or T/t alleles of the *BsmI*, *ApaI* or *TaqI* sites of the vitamin D receptor gene is/are present, wherein the b, a or T allele(s) are associated with risk of heart disease.
- 10 2. A method of determining susceptibility to heart disease according to claim 1, said method comprising analysing the genetic material of a subject to determine the haplotype of the *BsmI*, *ApaI* or *TaqI* alleles of the vitamin D receptor.
- 15 3. A method according to claim 2 wherein the haplotype may be determined by amplification of a relevant portion of the vitamin D receptor gene, followed by restriction enzyme digestion.
- 20 4. A method of determining susceptibility to heart disease according to claims 1 to 3, said method comprising determining the copy number of the B/b, A/a or T/t alleles or haplotype of the vitamin D receptor.
5. A method according to any one of the preceding claims further comprising determining whether the allele(s) present is/are associated with risk of heart disease.
- 25 6. A method according to claim 5 comprising comparing the allele(s) present in the genetic material of the subject with those known to be associated allele(s) of vitamin D receptor genotypes having known degrees of risk of heart disease
- 30 7. A method according to any one of the previous claims wherein said method further comprises determining aspects of calcium metabolism in a subject.
8. A method according to claim 7, wherein daily calcium intake of a subject is measured.

9. A method according to any one of the preceding claims, wherein said method is performed *in vitro*.

5 10. A method according to claim 9 wherein said method is performed on blood or tissue samples of a subject.

11. A method according to any one of the preceding claims wherein the subject is a mammal.

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12. A method according to claim 11 wherein the subject is a human.

13. A method according to claims 11 or 12 wherein the subject is male.

15 14. A method according to any one of the previous claims for determining susceptibility of a subject to atrial or ventricular hypertrophy, aortic calcification, myocardial infarction, or hypertension.

20 15. A method according to any one of the preceding claims further comprising treating the subject to reduce the risk of heart disease.

16. A method according to claim 15 wherein suitable treatments may include modifications to lifestyle, regular exercise, changes in diet or pharmaceutical preparations.

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17. A method of predicting the response of a subject to treatment, said method comprising analysing genetic material of a subject to determine which of the B/b, A/a or T/t allele(s) of the vitamin D receptor gene is/are present, in order to determine the underlying cause of the heart disease.

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18. A method according to claim 17 wherein said subject is first diagnosed as being susceptible to heart disease in accordance with any one of claims 1 to 16.

19. A method according to claims 17 or 18 further comprising administering the appropriate treatment.

5 20. Use of a kit to determine susceptibility to heart disease in a subject, said kit comprising (i) one or more nucleic acid primer molecules for amplification of a portion of the vitamin D receptor gene, and (ii) means for determining which allele(s) of said gene is/are present.

10 21. A kit for determining susceptibility to heart disease in a subject, said kit comprising (i) one or more nucleic acid primer molecules for amplification of a portion of the vitamin D receptor gene; (ii) means for determining which allele(s) of said gene is/are present; and (iii) means for indicating correlation between said allele(s) and risk of heart disease.

15 22. A kit according to claim 21, said kit comprising DNA control samples, for comparison with DNA sequences of a subject.

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